THERMODYNAMICS WORKSHEET

Name:_____ Date:_____

To receive full credit, you must show all steps in your work.

Temperature Conversions

To convert from Fahrenheit to Celsius ,
first subtract 32 degrees from the Fahrenheit temperature.
Then multiply that result by 5 and divide by 9

$$C = \frac{5(F - 32)}{9}$$

Convert the following Fahrenheit temperatures to Celsius, using the formula above:

86° F

50° F

110° F

212°F

15°F

98.6°F

To convert from Celsius to Fahrenheit,
First multiply the temperature in Celsius by 9 and divide by 5
Then add 32 degrees

$$F = \frac{C * 9}{5} + 32$$

Convert the following Celsius temperatures to Fahrenheit using the formula above:

20° C

37° C

100°C

22°C

<u>Calorie increase</u>

To find out how many calories something gains, we first burn it and then use that heat to **change the temperature of water. For each degree and that each gram of water increases, we say that the substance has transferred one calorie.**

The actual formula for transfer of heat in calories (Q) is written:

Q = m c ΔT where

m equals the mass of the water that is heated
c equals 1.0 calories per gram per degree Celsius for water
ΔT equals the change in temperature in Celsius

Find the amount of Calories gained in the following:

1. 100 mL (100grams) of water are heated from 20°C to 30° C

2. 500 mL of water are heated from 50° C to 100°C

3. 20 mL of water are heated from 70° to 135°C

If, instead of water, we have iron, then the value for "c" changes from 1.0 to 0.10 degrees/gram per degree Celsius.

Solve the following problems using iron instead of water.

4. 500 grams of iron are heated from 10°C to 100°C

5. 200 grams of iron are heated from 20°C to 30°C

6. 300 grams of iron are heated from 30°C to 120°C